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EXAMINER	
LUND, JEFFRIE ROBERT	
ART UNIT	**PAPER NUMBER**
1763	

DATE MAILED: 05/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/621,585	AHN ET AL.	
	Examiner	Art Unit	
	Jeffrie R. Lund	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 March 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *3-14 and 21-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *3-14 and 21-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 3-15, and 21-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 3, 12, and 14 all require a susceptor being configured to receive "a substrate", and a surface of "a substrate" received on the susceptor. It is not clear if the first and subsequent "a substrate" are the same substrate of it there are multiple substrates. The Examiner believes that the claims refer to the same substrate. If this is correct, then the subsequent "a substrate" should be amended to read "the substrate" or "said substrate".

3. Claims 12, 16, 17, 25, and 26 are rejected under 35 U.S.C. 102(e) as being anticipated by Sandhu et al, US Patent 6,499,425 B1.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 3 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cook et al, US Patent 6,352,594 B2, in view of Sandhu et al, US Patent 6,499,425 B1.

Cook et al teaches a CVD apparatus that includes: a processing chamber 42; a wafer boat 40 holding a plurality substrates 56; a showerhead 78 configured to spray the reaction gas parallel to the substrates, having a housing 80 with a first plenum 88 receiving a first gas via an inlet port 84, a second plenum 90 receiving a second gas via an inlet port 86, a spray plate 94, and a cooling channel. (Figure 7)

Cook et al differs from the present invention in that Cook et al does not teach a wire gas heater in the first plenum and connected to a terminal.

Sandhu et al teaches a CVD apparatus that includes: a processing chamber 201; a susceptor 204 for holding a substrate 206; and a shower head 210 comprising a housing 342, a spray plate 234, inlet ports 238, 240 and a wire heating element 222 in the housing between the inlet ports and the spray plate. The wire heats and partially ionizes the processing gases prior to entering the processing chamber. (Entire documents, specifically, figures 9-12 and column 8 lines 42-67)

The motivation for adding the gas heater of Sandhu et al to the apparatus of Cook et al is to heat and partially ionize the gas prior to its entry into the processing chamber as taught by Sandhu et al.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to add the gas heater of Sandhu et al to the apparatus of Cook et al.

6. Claims 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cook et al and Sandhu et al as applied to claims 3 and 7 above, and further in view of Yamanaka et al, US Patent 6,653,212 B1.

Cook et al and Sandhu et al differ from the present invention in that they do not teach that the wire heater is coiled heating wire made from tungsten.

Yamanaka et al teaches a coil wire heater 5 made of tungsten. (Figure 1, column 5 lines 12-21)

The motivation for replacing the generic wire heater of Cook et al and Sandhu et al with the heating wire of Yamanaka et al is to provide a specific heating wire as required by Cook et al and Sandhu et al but only generically described. A coiled wire heater is a more efficient because it provides more heating surface in the same amount of space.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the wire heater of Cook et al and Sandhu et al the tungsten coiled wire heater of Yamanaka et al.

7. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cook et al and Sandhu et al.

Cook et al and Sandhu et al differ from the present invention in that they do not teach that the terminal is elastic and insolates the terminal from the housing.

Ceramic (electrically insulating) spring load (elastic) terminals are well known in the and commonly use to mount wires for various purposes. Examples of these terminals can be seen in halogen lighting systems.

The motivation for adding a specific terminal means to the apparatus of Cook et al and Sandhu et al is to provide a means for mounting the wire heater as required by Cook et al and Sandhu et al but not described.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the terminal means of Cook et al and Sandhu et al electrically insulating and elastic.

8. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cook et al and Sandhu et al as applied to claims 3 and 7 above, and further in view of Arami et al, US Patent 5,958,140.

Cook et al and Sandhu et al differ from the present invention in that they do not teach that the sidewalls of the showerhead are cooled.

Arami et al teaches a showerhead with cooled sidewalls 47. (Figure 2)

The motivation for adding the cooling means of Arami et al to the apparatus of Cook et al and Sandhu et al is to maintain the showerhead at a specific temperature.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to add the cooling means of Arami et al to the apparatus of Cook et al and Sandhu et al.

9. Claims 12-15, 22, 24, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cook et al, Sandhu et al, and Arami et al as applied to claims 3, 7, 10, and 11 above, and further in view of Ohashi et al, US Patent 6,059,885.

Cook et al, Sandhu et al, and Arami et al differ from the present invention in that they do not teach that the first plenum extends further from the processing chamber than the second plenum.

Ohashi et al teaches a first plenum S extends further from the processing chamber than the second plenum 719'. (Figure 7)

The motivation for elongating the first plenum in the apparatus of Cook et al, Sandhu et al, and Arami et al is to provide a specific shape for the plenums as taught by Ohashi et al. Furthermore, it has been held that a change in shape is a matter of choice which a person of ordinary skill in the art would have found obvious. (See *In re Dailey*, 357 F.2d 669,149 USPQ 47 (CCPA 1966) MPEP 2144.04(d))

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to elongate the first plenum of Cook et al, Sandhu et al, and Arami et al as taught by Ohashi et al.

10. Claims 3, 7, 10, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brors et al, US Patent 6,352,593 B1, in view of Sandhu et al, US Patent 6,499,425 B1.

Brors et al teaches a CVD apparatus that includes: a processing chamber 22a; a susceptor 46 holding a plurality substrates 44; a showerhead 208 configured to spray the reaction gas parallel to the substrates, having a housing with a first plenum 231a receiving a first gas via an inlet port 232, a second plenum 231b receiving a second gas via an inlet port 232, a common co-planar spray plate 234, and a cooling channel 235 to cool the housing. (Figures 31a, 32a, 33a, 36)

Brors et al differs from the present invention in that Brors et al does not teach a wire gas heater in the first plenum and connected to a terminal.

Sandhu et al teaches a CVD apparatus that includes: a processing chamber 201; a susceptor 204 for holding a substrate 206; and a shower head 210 comprising a housing 342, a spray plate 234, inlet ports 238, 240 and a wire heating element 222 in

the housing between the inlet ports and the spray plate. The wire heats and partially ionizes the processing gases prior to entering the processing chamber. (Entire documents, specifically, figures 9-12 and column 8 lines 42-67)

The motivation for adding the gas heater of Sandhu et al to the apparatus of Brors et al is to heat and partially ionize the gas prior to its entry into the processing chamber as taught by Sandhu et al.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to add the gas heater of Sandhu et al to the apparatus of Brors et al.

11. Claims 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brors et al and Sandhu et al as applied to claims 3, 7, 10, and 11 above, and further in view of Yamanaka et al, US Patent 6,653,212 B1.

Brors et al and Sandhu et al differ from the present invention in that they do not teach that the heating wire is a coiled heating wire is made from tungsten.

Yamanaka et al teaches a coil wire heater 5 made of tungsten. (Figure 1, column 5 lines 12-21)

The motivation for replacing the generic wire heater of Brors et al and Sandhu et al with the heating wire of Yamanaka et al is to provide a specific heating wire as required by Brors et al and Sandhu et al but only generically described. A coiled wire heater is a more efficient because it provides more heating surface in the same amount of space.

Therefore it would have been obvious to one of ordinary skill in the art at the time

the invention was made to replace the wire heater of Brors et al and Sandhu et al the tungsten coiled wire heater of Yamanaka et al.

12. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brors et al and Sandhu et al.

Brors et al and Sandhu et al differ from the present invention in that they do not teach that the terminal is elastic and insolates the terminal from the housing.

Ceramic (electrically insulating) spring loaded (elastic) terminals are well known in the and commonly use to mount wires for various purposes. Examples of these terminals can be seen in halogen lighting systems.

The motivation for adding a specific terminal means to the apparatus of Brors et al and Sandhu et al is to provide a means for mounting the wire heater as required by Brors et al and Sandhu et al but not described.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the terminal means of Brors et al and Sandhu et al electrically insulating and elastic.

13. Claims 12-15, and 21-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brors et al, and Sandhu et al as applied to claims 3, 7, 10, and 11 above, and further in view of Ohashi et al, US Patent 6,059,885.

Brors et al, and Sandhu et al differ from the present invention in that they do not teach that the first plenum extends further from the processing chamber than the second plenum.

Ohashi et al teaches a first plenum S extends further from the processing

chamber than the second plenum 719'.

The motivation for elongating the first plenum in the apparatus of Brors et al, and Sandhu et al is to provide a specific shape for the plenums as taught by Ohashi et al. Furthermore, it has been held that a change in shape is a matter of choice which a person of ordinary skill in the art would have found obvious. (See *In re Dailey*, 357 F.2d 669,149 USPQ 47 (CCPA 1966) MPEP 2144.04(d))

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to elongate the first plenum of Brors et al, Sandhu et al, and Arami et al as taught by Ohashi et al.

14. Claims 3, 7, 10, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Garnache, US Patent 3,603,284 in view of Sandhu et al, US Patent 6,499,425 B1.

Garnache teaches a CVD apparatus that includes: a processing chamber 18; a susceptor 28 holding a plurality substrates 30; a showerhead configured to spray the reaction gas parallel to the substrates, having a housing 14 with a plenum 36 receiving a first gas 32 via an inlet port 34, a spray plate 40, and a cooling channel to cool the housing. (Figure)

Garnache differs from the present invention in that Garnache does not teach a wire gas heater in the first plenum and connected to a terminal.

Sandhu et al teaches a CVD apparatus that includes: a processing chamber 201; a susceptor 204 for holding a substrate 206; and a shower head 210 comprising a housing 342, a spray plate 234, inlet ports 238, 240 and a wire heating element 222 in

the housing between the inlet ports and the spray plate. The wire heats and partially ionizes the processing gases prior to entering the processing chamber. (Entire documents, specifically, figures 9-12 and column 8 lines 42-67)

The motivation for adding the gas heater of Sandhu et al to the apparatus of Garnache is to heat and partially ionize the gas prior to its entry into the processing chamber as taught by Sandhu et al.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to add the gas heater of Sandhu et al to the apparatus of Garnache.

15. Claims 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Garnache and Sandhu et al as applied to claims 3, 7, 10, and 11 above, and further in view of Yamanaka et al, US Patent 6,653,212 B1.

Garnache and Sandhu et al differ from the present invention in that they do not teach that the heating wire is a coiled heating wire is made from tungsten.

Yamanaka et al teaches a coil wire heater 5 made of tungsten. (Figure 1, column 5 lines 12-21)

The motivation for replacing the generic wire heater of Garnache and Sandhu et al with the heating wire of Yamanaka et al is to provide a specific heating wire as required by Garnache and Sandhu et al but only generically described. A coiled wire heater is a more efficient because it provides more heating surface in the same amount of space.

Therefore it would have been obvious to one of ordinary skill in the art at the time

the invention was made to replace the wire heater of Garnache and Sandhu et al the tungsten coiled wire heater of Yamanaka et al.

16. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Garnache and Sandhu et al.

Garnache and Sandhu et al differ from the present invention in that they do not teach that the terminal is elastic and insolates the terminal from the housing.

Ceramic (electrically insulating) spring loaded (elastic) terminals are well known in the and commonly use to mount wires for various purposes. Examples of these terminals can be seen in halogen lighting systems.

The motivation for adding a specific terminal means to the apparatus of Garnache and Sandhu et al is to provide a means for mounting the wire heater as required by Garnache and Sandhu et al but not described.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the terminal means of Garnache and Sandhu et al electrically insulating and elastic.

17. Claims 3 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Foehring et al, US Patent 3,805,736, in view of Sandhu et al, US Patent 6,499,425 B1.

Foehring et al teaches a CVD apparatus that includes: a processing chamber; a susceptor 32 holding a plurality substrates; a showerhead configured to spray the reaction gas parallel to the substrates, having a housing 76, 78, 80 with a first plenum receiving a first gas via an inlet port 38, a second plenum receiving a second gas via an inlet port 52, and a common co-planar spray plate 54. (Figures 2, 3, 5, and 7)

Foehring et al differs from the present invention in that Foehring et al does not teach a wire gas heater in the first plenum and connected to a terminal.

Sandhu et al teaches a CVD apparatus that includes: a processing chamber 201; a susceptor 204 for holding a substrate 206; and a shower head 210 comprising a housing 342, a spray plate 234, inlet ports 238, 240 and a wire heating element 222 in the housing between the inlet ports and the spray plate. The wire heats and partially ionizes the processing gases prior to entering the processing chamber. (Entire documents, specifically, figures 9-12 and column 8 lines 42-67)

The motivation for adding the gas heater of Sandhu et al to the apparatus of Foehring et al is to heat and partially ionize the gas prior to its entry into the processing chamber as taught by Sandhu et al.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to add the gas heater of Sandhu et al to the apparatus of Foehring et al.

18. Claims 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Foehring et al and Sandhu et al as applied to claims 3 and 7 above, and further in view of Yamanaka et al, US Patent 6,653,212 B1.

Foehring et al and Sandhu et al differ from the present invention in that they do not teach that the heating wire is a coiled heating wire is made from tungsten.

Yamanaka et al teaches a coil wire heater 5 made of tungsten. (Figure 1, column 5 lines 12-21)

The motivation for replacing the generic wire heater of Foehring et al and Sandhu

et al with the heating wire of Yamanaka et al is to provide a specific heating wire as required by Foehring et al and Sandhu et al but only generically described. A coiled wire heater is a more efficient because it provides more heating surface in the same amount of space.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the wire heater of Foehring et al and Sandhu et al the tungsten coiled wire heater of Yamanaka et al.

19. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Foehring et al and Sandhu et al.

Foehring et al and Sandhu et al differ from the present invention in that they do not teach that the terminal is elastic and insolates the terminal from the housing.

Ceramic (electrically insulating) spring loaded (elastic) terminals are well known in the and commonly use to mount wires for various purposes. Examples of these terminals can be seen in halogen lighting systems.

The motivation for adding a specific terminal means to the apparatus of Foehring et al and Sandhu et al is to provide a means for mounting the wire heater as required by Foehring et al and Sandhu et al but not described.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the terminal means of Foehring et al and Sandhu et al electrically insulating and elastic.

20. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Foehring et al and Sandhu et al as applied to claims 3 and 7 above, and further in

view of Arami et al, US Patent 5,958,140.

Foehring et al and Sandhu et al differ from the present invention in that they do not teach that the sidewalls of the showerhead are cooled.

Arami et al teaches a showerhead with cooled sidewalls 47. (Figure 2)

The motivation for adding the cooling means of Arami et al to the apparatus of Foehring et al and Sandhu et al is to maintain the showerhead at a specific temperature.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to add the cooling means of Arami et al to the apparatus of Foehring et al and Sandhu et al.

21. Claims 12-15, and 21-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Foehring et al, Sandhu et al, and Arami et al as applied to claims 3, 7, 10, and 11 above, and further in view of Ohashi et al, US Patent 6,059,885.

Foehring et al, Sandhu et al, and Arami et al differ from the present invention in that they do not teach that the first plenum extends further from the processing chamber than the second plenum.

Ohashi et al teaches a first plenum S extends further from the processing chamber than the second plenum 719'. (Figure 7)

The motivation for elongating the first plenum in the apparatus of Foehring et al, Sandhu et al, and Arami et al is to provide a specific shape for the plenums as taught by Ohashi et al. Furthermore, it has been held that a change in shape is a matter of choice which a person of ordinary skill in the art would have found obvious. (See *In re Dailey*,

357 F.2d 669,149 USPQ 47 (CCPA 1966) MPEP 2144.04(d))

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to elongate the first plenum of Foehring et al, Sandhu et al, and Arami et al as taught by Ohashi et al.

Response to Arguments

22. Applicant's arguments with respect to claims 3-15, and 21-27 have been considered but are moot in view of the new ground(s) of rejection.

23. Applicant's arguments filed March 9, 2006 have been fully considered but they are not persuasive.

The 102 rejections under Ryoji et al and Sandhu et al have been dropped because they do not teach the newly added limitation "such that a plane defined a surface of a substrate received on the susceptor extends beyond an edge of the substrate and intersects the showerhead".

The 103 rejections under Ryoji et al; Ryoji et al and Yamanaka et al; and Ryoji et al, Yamanaka et al, and Arami et al have been dropped because they do not teach the newly added limitation "such that a plane defined a surface of a substrate received on the susceptor extends beyond an edge of the substrate and intersects the showerhead". In the arguments directed to Ryoji et al, the Applicant has misidentified the heating element as accelerating electrode 36. The heating element referred to by the Examiner in the rejection is the coiled wire cathode 11 that heats and ionizes the Ar gas supplied to the discharge chamber. The cathode 11 is heated to a temperature of above about 2000°C, which causes thermions i.e. "thermal ions" to be formed from contact of the Ar

gas with the cathode. The accelerating electrode 36 was not part of the rejection and not limited by the claims. The term "reaction gas" is broad and includes all gases involved in the reaction process. Without the Ar gas to form the plasma, the process of Ryoji et al would not function; therefore, Ar is a reaction gas. Ryoji et al could be used to in place of Sandhu et al in the rejections above. These rejections have not been made because they do not provide any additional or different teachings, and if they were applied, would have resulted in an undue multiplication of references. (See MPEP 707.07(g))

The 103 rejections under Ohashi et al and Ryoji et al; Ohashi et al, Ryoji et al, and Arami et al; Ohashi et al and Sandhu et al; Ohashi et al, Sandhu et al, and Arami et al have been dropped because they do not teach the newly added limitation "such that a plane defined a surface of a substrate received on the susceptor extends beyond an edge of the substrate and intersects the showerhead".

In regard to the argument that there is no motivation to modify the apparatus of Cook to include the gas heater of Sandhu, and that cool actually teaches away from such a modification, the Examiner disagrees. First, the motivation for adding the heater of Sandhu et al to the apparatus of Cook et al is to preheat the gas prior to its injection into the chamber as taught by Sandhu et al, thus shortening the time the wafers are exposed to the high temperatures of the processing chamber and preventing damage caused by ion bombardment. Second, while it is true that Cook et al teaches cooling the injector, this does not amount to a teaching that the gas should not be heated. It is common to heat the gas prior to its entry into the chamber to prevent it from condensing

and to raise the temperature of the gas to near the dissociation temperature, and to cool the injector. This is done to maintain the temperature of the gas in the proper temperature range. If a gas is too cool it can condense or cause thermal shock to the substrate, and if the gas is too hot it can dissociate and deposit on the injector causing damage to the injector. (See US Patent Application 2003/0101938 A1 to Ronsse et al or US Patent Application 2001/0035127 A1 to Metzner et al.) The injector of Cook et al is cooled to prevent the premature deposition, and thus does not prevent the gas from being heated. The Examiner further notes that the present invention also has a cooling means to cool the walls of showerhead, which also cools the injector.

The applicant further argues that:

> The alleged motivation to combine contradictory elements of Cook and Sandhu appears to be improper hindsight based on the Applicants' disclosure as opposed to the prior art. As set forth in MPEP Sec. 2143, the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure.
>
> The disclosure of Cook specifically discusses cooling the gas injectors as opposed to including a heater in the gas injectors. Accordingly, nothing in either Cook or Sandhu teaches or suggests use of the gas heater of Sandhu in the cooled gas injector of Cook, and the inclusion of such a heater in the cooled gas injector of Cook would defy the logic of cooling the gas injector of Cook. If the Examiner should maintain any rejections of any claims based on the combination of Sandhu and Cook, the Applicants request that the Examiner identify in the art

the teaching or suggestion to combine Sandhu and Cook as required by MPEP Sec. 2143.

The Examiner disagrees with this summary.

The Applicant has misquoted the MPEP Sec. 2143 which states:

> To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. (Underline added)

The Examiner has met all these requirements in the rejections under Cook et al in view of Sandhu et al. The motivation for adding a heater to the apparatus of Cook et al as taught by Sandhu et al is to heat and partially ionize the gas prior to its entering into the processing chamber. Contrary to the Applicants assertion "the inclusion of such a heater in the cooled gas injector of Cook would defy the logic of cooling the gas injector of Cook", it is well understood in the art that the gas must be maintained at a temperature between its condensation point and it thermal disassociation point. This requires a heater and a cooler as clearly taught by Ronsse et al, US Patent Application 2003/0101938 A1, and Metzner et al, US Patent Application 2001/0035127 A1. Applicant has not pointed out any reason one of ordinary skill in the art would not have a reasonable expectation of success, or any limitation not addressed by the

combination.

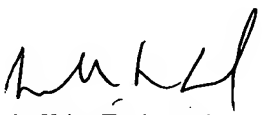
Conclusion

24. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The cited art teaches using heaters in a cooled injector.

25. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrie R. Lund whose telephone number is (571) 272-1437. The examiner can normally be reached on Monday-Thursday (6:30 am-6:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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JRL
5/19/06